

# 8.2

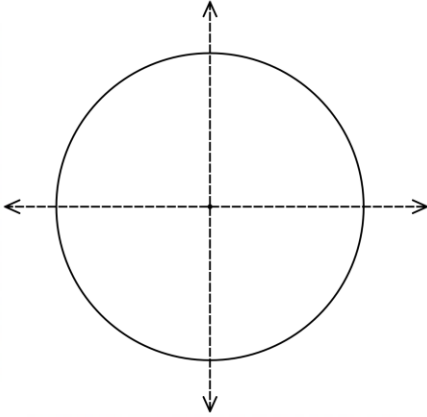
Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Angle Measurement (Radians)

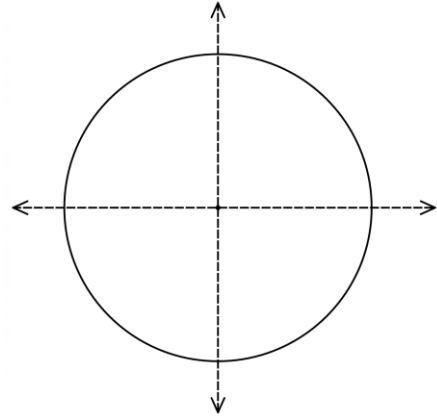
SCORE:

/

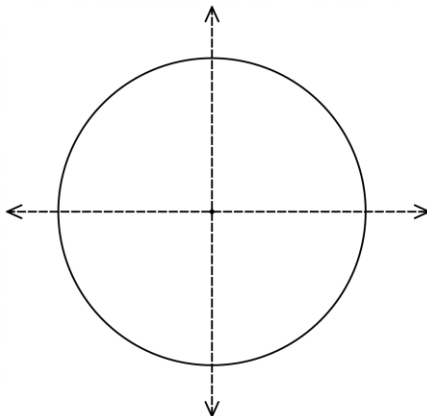
1. Draw lines to divide the circle into increments of  $\frac{\pi}{4}$ .



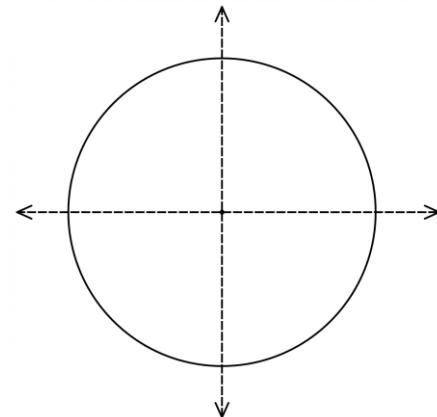
2. Draw lines to divide the circle into increments of  $\frac{\pi}{2}$ .



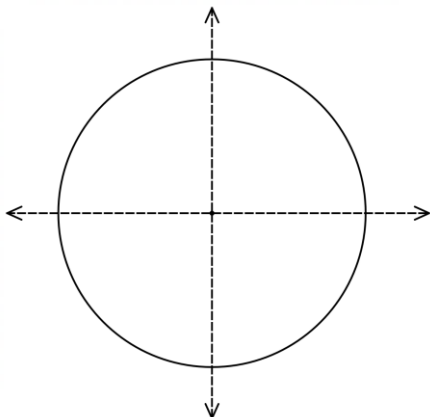
3. Draw lines to divide the circle into increments of  $\frac{\pi}{6}$ .



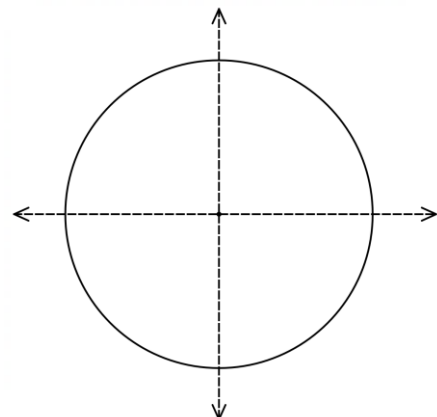
4. Draw lines to divide the circle into increments of  $\frac{\pi}{3}$ .



5. Draw lines to divide the circle into increments of  $\frac{\pi}{12}$ .

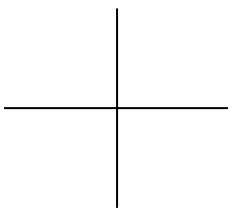


6. Draw lines to divide the circle into increments of  $\frac{\pi}{18}$ .

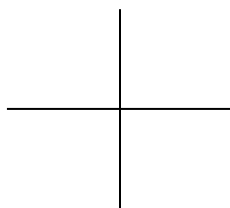


Part A: Sketch each angle in standard position.

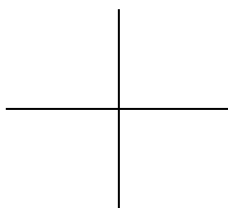
7.  $\pi$



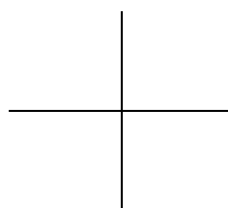
8.  $\frac{\pi}{2}$



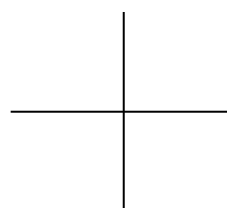
9.  $\frac{\pi}{3}$



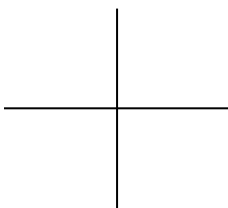
10.  $\frac{\pi}{4}$



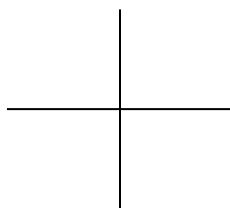
11.  $\frac{\pi}{6}$



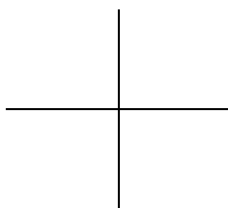
12.  $\frac{2\pi}{3}$



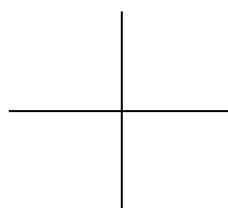
13.  $\frac{3\pi}{4}$



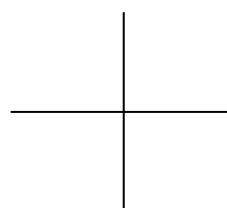
14.  $\frac{5\pi}{6}$



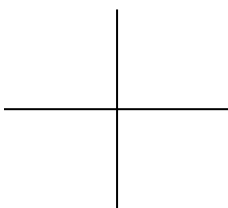
15.  $\frac{7\pi}{6}$



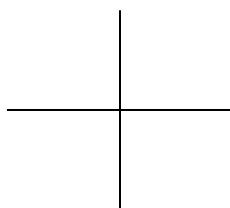
16.  $\frac{5\pi}{4}$



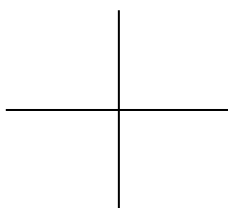
17.  $\frac{4\pi}{3}$



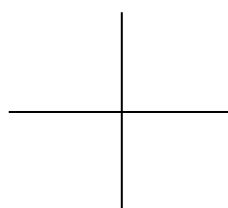
18.  $\frac{3\pi}{2}$



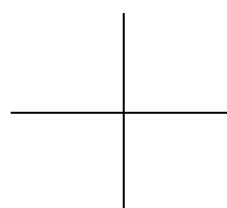
19.  $\frac{5\pi}{3}$



20.  $\frac{7\pi}{4}$



21.  $\frac{11\pi}{6}$



Part B: Determine the reference angle (in radians) for each angle above. **Write your answer below, AND sketch the reference angle in Part A.**

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

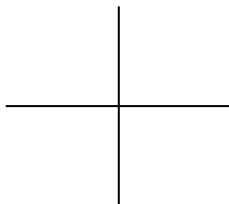
19.

20.

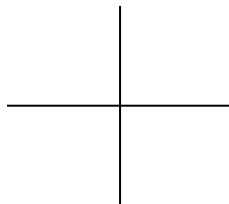
21.

Part C: Sketch each angle in standard position.

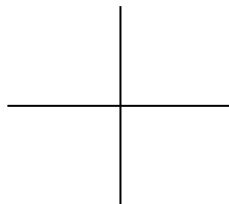
22.  $-\frac{2\pi}{3}$



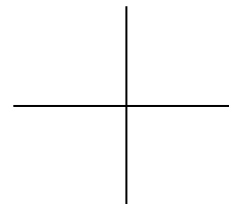
23.  $-\frac{3\pi}{4}$



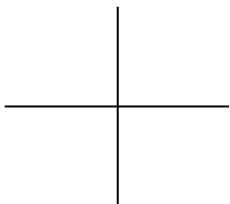
24.  $\frac{7\pi}{12}$



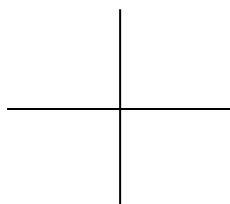
25.  $\frac{10\pi}{3}$



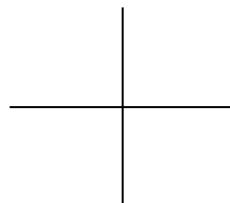
26.  $-\frac{23\pi}{6}$



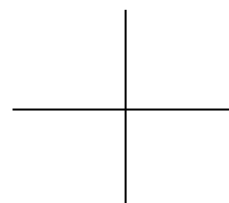
27.  $\frac{17\pi}{6}$



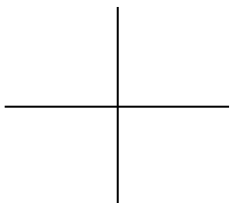
28.  $-\frac{\pi}{2}$



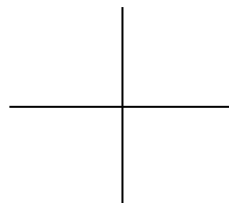
29.  $\frac{23\pi}{12}$



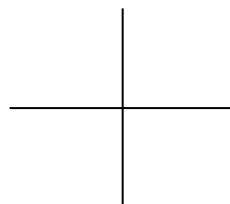
30.  $-\frac{11\pi}{4}$



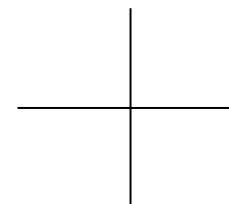
31.  $-\frac{\pi}{6}$



32.  $\frac{15\pi}{4}$



33.  $\frac{13\pi}{9}$



Part D: Determine the reference angle (in radians) for each angle above. **Write your answer below, AND sketch the reference angle in Part C.**

22.

23.

24.

25.

26.

27.

28.

29.

30.

31.

32.

33.

Determine a **positive and negative** coterminal angle (in radians) for each angle.

34.  $-\frac{3\pi}{4}$

35.  $\frac{10\pi}{3}$

36.  $\pi$

37.  $\frac{11\pi}{6}$

38.  $-\frac{\pi}{2}$

39.  $\frac{11\pi}{12}$

40.  $-\frac{\pi}{6}$

41.  $\frac{\pi}{3}$

Determine which quadrant each of the following angles terminate.

42.  $\frac{31\pi}{18}$

43.  $\frac{5\pi}{3}$

44.  $-\frac{\pi}{12}$

45.  $\frac{19\pi}{18}$

46.  $-\frac{5\pi}{12}$

47.  $\frac{5\pi}{6}$

48.  $\frac{10\pi}{3}$

49.  $-\frac{5\pi}{3}$

50.  $\frac{17\pi}{12}$

51.  $-\frac{\pi}{3}$

52.  $\frac{2\pi}{3}$

53.  $-\frac{7\pi}{4}$

54.  $\frac{11\pi}{6}$

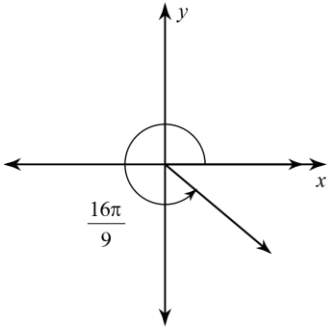
55.  $-\frac{13\pi}{6}$

56.  $\frac{5\pi}{4}$

57.  $\frac{9\pi}{4}$

Determine the reference angle and at least one coterminal angle for each angle drawn below.

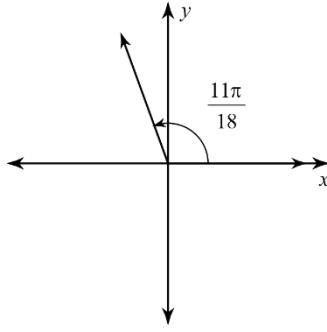
58.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

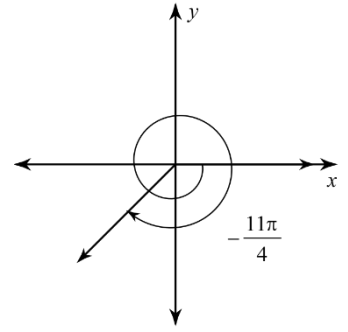
59.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

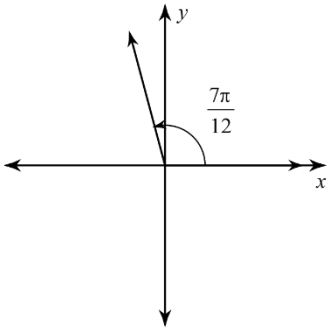
60.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

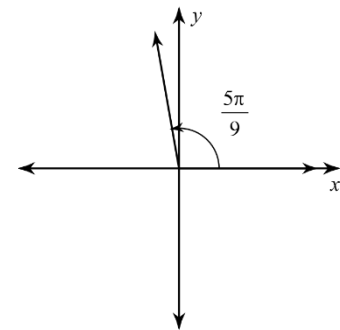
61.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

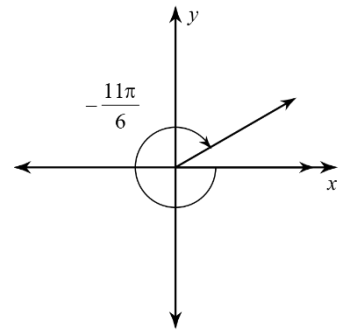
62.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

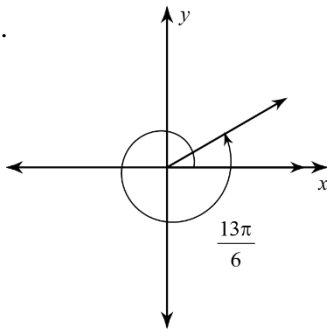
63.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

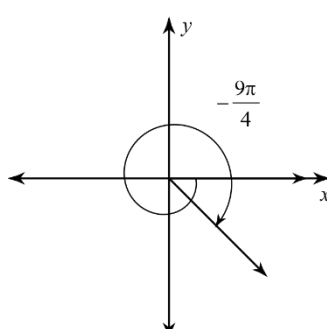
64.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

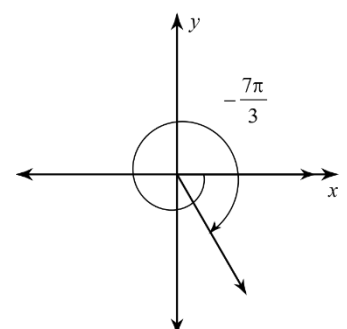
65.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_

66.



Reference Angle: \_\_\_\_\_

Coterminal Angle: \_\_\_\_\_